

Office Action Summary

Application No.

10/549,981

Applicant(s)

UCHIDA ET AL.

Examiner

N Edwards

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3, 4 and 6-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3, 4, 6, 7 and 9-19 is/are rejected.
- 7) ☒ Claim(s) 8, 17, and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

The Final Action dated 3/20/08 is withdrawn and substitute with this non-final action.

1. Claims 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 overall is vague and indefinite because 1) "a cloth fiber layer" is indefinite since it is written in aggregation. The claim fails to convey how the carbon fiber cloth layer combines with the CFRP layers of claim 6 to form a dummy wafer. 2) Furthermore, claim 11 line 2 "the principal surfaces" is indefinite and vague since it lacks proper antecedent basis in claim 6. Note claim 14 is also indefinite and vague for the same reasons given supra for claim 11.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 3, 4, 6, 11 and 17-19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Takemura (US 6228,473).

Takemura, a **Nippon Mitsubishi Oil Patent**, teaches a plate-like carbon fiber reinforced composite material (dummy wafer having CFRP) comprising carbon fibers (pitch based) reinforced plastic such as epoxy resin includes carbon fibers (includes cloth) having a tensile (elastic) modulus of 200 to 1000 GPA. Takemura further teaches the plate like composite (dummy wafer) comprise a plurality of CRFP layers (one dimensionally unidirectional prepreg oriented in one direction) in which carbon fiber in one layer have a tensile modulus of 200 to 1000 GPA (front side) and the carbon fibers in the other layer (back side) have a tensile

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modulus of 5 to 160 GPa. See claims 3,5, and * for example. Also see Col.3 lines 9-25 and example 2. Takemura the layer (sheets) are oriented to different angle in example 2.

4. Claims 3,4, 6, and 17-19 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kobomura (US 5,552,214).

Kobomura teaches a unidirectional prepreg (dummy wafer) comprising (a) pitch based carbon fibers (CRFP) arranged in and epoxy resin matrix where in the carbon fibers have a modulus in tension (or tensile modulus) of not less than 450 GPa adjacent to a layer (B) which include carbon fibers having a tensile modulus of not less than 400 GPa in a epoxy matrix. See claim 1,2,4,5, and examples 1-6 for example. Kobomura further teaches the layer A and b are unidirectional or +45 degrees Lamination (which is oriented in different angles) at col.7 lines 49-59, for example.

5. Claims 12 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kishi (US 5,616,405).

Kishi teaches a carbon fiber cloth prepreg (dummy wafer) comprising carbon fiber reinforced plastic cloth, an epoxy resin and a curing agent diaminodiphenylsulfone which gives the prepreg a high toughness, high modulus, and as well as high thermal resistance.

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6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kishi taken with Ohshima (US 6,703,116).

Reading claim 13 in light of the specification at page 24 lines 10 to page 25 line 9 reveals that the coat layer (spec said coating resin) or coating resin which resistance against polar solvent and cures at a temperature of 70 degrees or lower is silicone resin, acrylic resin or epoxy resin.

Kishi is applied for the same reason given supra which is hereby incorporated by reference. Kishi teaches all of the claims invention except a coating layer as recited by claim 13. However, Ohshima, a **Nippon Mitsubishi Oil patent**, teaches it is well known in the art of carbon fiber reinforcing fiber plastic (CRFP) or prepreg made from CRFP (dummy wafer) to coat a resin layer and cure an acrylic resin or epoxy resin, or silicone resin at 90 degrees C or less, in order to provide excellent resistance to polar solvent. See abstract, col.1 lines 10-24, and col.2 lines 5-33, for example.

Thus, it would have been obvious to one having ordinary skill in the art to combine the coating resin layer, as taught by Ohshima, to the carbon fiber reinforced plastic cloth, as taught by Kishi, in order to provide excellent resistance to polar solvent.

8. Claim 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemura (US 6,228,473) taken with Ohshima.

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Reading claim 13 in light of the specification at page 24 lines 10 to page 25 line 9 reveals that the coat layer (spec said coating resin) or coating resin which resistance against polar solvent and cures at a temperature of 70 degrees or lower is silicone resin, acrylic resin or epoxy resin.

Takemura, a **Nippon Mitsubishi Oil patent**, is applied for the same reason given above which is hereby incorporated by reference. Takemura teaches all of the claimed invention except a coating (resin) layer as recited by claim 13. . However, Ohshima, a **Nippon Mitsubishi Oil patent**, teaches is it well known in the art of carbon fiber reinforcing fiber plastic (CRFP) or prepreg made of CRFP (dummy wafer) to coat a resin layer and cure an acrylic resin or epoxy resin, or silicone resin at 90 degrees C or less, in order to provide excellent resistance to polar solvent .See abstract , col.1 lines10-24, and col.2 lines 5-33, fro example.

Thus, it would have been obvious to one having ordinary skill in the art to combine the coating resin layer, as taught by Ohshima, to the carbon fiber reinforced plastic , as taught by Takemura, in order to provide excellent resistance to polar solvent.

9. Claims 7,9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemura taken with Ooshima (US 6,815,037).

Takemura, a **Nippon Mitsubishi Oil patent**, is applied for the same reason given above which is hereby incorporated by reference. Takemura teaches all of the claimed invention except the details of claims 7,9, and 10 in the carbon fiber reinforced plastic (CRFP).

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Ooshima , a **Nippon Mitsubishi Oil patent**, teaches it is well known in the art of CRFP to incorporate the details of claims 7,9, and 10 in to a carbon reinforced plastic in order to make the carbon fiber reinforced composite material, light weight, higher rigidity, and higher heat resistance. See abstract, Col.5 lines 39-55, Claim 2,3,4, and 5, for example.

Thus, it would have been obvious to one having ordinary skill in the art to combine the details of claims 7,9, and 10, as taught by Ooshima, to the carbon fiber reinforced plastic , as taught by Takemura, in order to provide the CRFP with lighter weight, higher rigidity, and higher heat resistance.

10. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takemura taken with Ooshima as applied to claim 9 above, and further in view of Kishi (US 5616,405).

Takemura taken with Ooshima applied for the same reason given above which is hereby incorporated by reference. Takemura, a **Nippon Mitsubishi Oil patent**,

teach the claimed invention except a diaminodiphenylsulfone as the epoxy matrix curing agent. Kishi teaches it is well known in the art of carbon fiber cloth prepreg (dummy wafer) comprising carbon fiber reinforced plastic cloth and an epoxy resin to combine or add a curing agent diaminodiphenylsulfone in order to gives the prepreg (dummy wafer) with a high toughness, high modulus , and as well as high thermal resistance.

Thus, it would have been obvious to one having ordinary skill to add a harder (curing agent), as taught by Kishi, to the CRFP, as taught by Takemura, in order to provide the CRFP with a high toughness, high modulus , and as well as high thermal resistance.

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11. Claim 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Takemura taken with Ooshima as applied to claim 9 above, and further in view of Ohshima (US 6,703,116). Takemura taken with Ooshima is applied for the same reason given above which is hereby incorporated by reference. Takemura, a **Nippon Mitsubishi Oil patent**, teaches the claimed invention except a coating layer of claim 16. However, Ohshima, a **Nippon Mitsubishi Oil patent**, teaches it is well known in the art of carbon fiber reinforcing fiber plastic (CRFP) or prepreg made of CRFP (dummy wafer) to coat a resin layer and cure an acrylic resin or epoxy resin, or silicone resin at 90 degrees C or less, in order to provide excellent resistance to polar solvent. See abstract, col.1 lines 10-24, and col.2 lines 5-33, for example. Thus, it would have been obvious to one having ordinary skill in the art to combine the coating resin layer, as taught by Ohshima, to the carbon fiber reinforced plastic, as taught by Takemura, in order to provide excellent resistance to polar solvent.

Allowable Subject matter

12. Claims 8, 17, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication should be directed to Primary Examiner Edwards at telephone number 571-272-1521.

/N Edwards/
Primary Examiner
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